Practice: 394 - Firebreak

Scenario: #1 - Constructed - Slight Slopes with Light Equipment

Scenario Description:

A tractor and disk (2-3 passes) are used to install a bare-ground firebreak with a width of 15' around the perimeter of a 40 acre native grass field. The firebreak will be used to safely implement a planned prescribed burn. Generally water control devices such as water bars are not needed due either to the lack of steep terrain or the temporary nature of the firebreak.

Before Situation:

The health and vigor of a rangeland field has declined and brush is beginning to encroach due to lack of fire over a long period of time. A prescribed burn plan has been developed, which requires the installation of a firebreak to safely conduct the burn. Resource concerns include wildfire hazard from excessive biomass accumulation, undesirable plant productivity and health, inadequate plant structure and composition, and habitat degradation.

After Situation:

A 15' wide firebreak, disked to bare mineral soil, has been constructed around the perimeter of the field to be burned.

Scenario Feature Measure: Length of firebreak

Scenario Unit: Feet

Scenario Typical Size: 5,280

Scenario Cost: $284.42 **Scenario Cost/Unit:** $0.05

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price ($/unit)	Quantity	Cost
Equipment/Installation						
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acre	$13.37	5	$66.85
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$217.57	1	$217.57

Practice: 394 - Firebreak

Scenario: #2 - Constructed - Moderate Slopes with Medium Equipment

Scenario Description:

Medium sized equipment such as a small dozer or tractor w/blade is used to install a bare-ground firebreak of a minimum width of 10' around the perimeter of a 40 acre woodland field on slopes less than 15%. Generally, water control devices such as water bars are limited to 10 or less per 1,000 feet when properly planned and installed using the same equipment.

Before Situation:

The health and vigor of a rangeland/savannah field has declined due to the encroachment or increase of brush/trees, caused by the lack of fire over a long period of time. The field is reverting to a closed canopy forest and a prescribed burn plan has been developed, which requires the installation of a firebreak to safely conduct the burn. Conditions such as topography, rockiness, the presence of brush and trees, etc. make the use of typical farm equipment impractical. As slopes increase, the potential for excessive erosion increases from soil disturbances. Therefore, the installation of water control devices such as water bars will be important in protecting the resource base. Resource concerns include wildfire hazards from excessive biomass accumulation, undesirable plant productivity and health, inadequate plant structure and composition, and habitat degradation.

After Situation:

A firebreak that exposes at least 10' of mineral soil has been constructed around the perimeter of the field to be burned using dozers or scrapers, according to the prescribed burn plan requirments. Even though the slopes are gentle, water bars or wing ditches have been installed to reduce the threat of water erosion.

Scenario Feature Measure: Length of firebreak

Scenario Unit: Foot

Scenario Typical Size: 5,280

Scenario Cost: $966.52 **Scenario Cost/Unit:** $0.18

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price ($/unit)	Quantity	Cost
Equipment/Installation						
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	$57.18	5	$285.90
Water Bars	1500	Installation of graded trail water controlling structures such as water bars, broad based dips for erosion control. Typical cross section is 1.5 feet high with 4:1 side slopes yielding about 0.33 CY/ft of length.	Foot	$2.30	150	$345.00
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	$23.61	5	$118.05
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$217.57	1	$217.57

Practice: 394 - Firebreak

Scenario: #3 - Constructed - Steep Slopes with Medium Equipment

Scenario Description:

Medium sized equipment such as a small dozer or tractor w/blade is used to install a bare-ground firebreak of a minimum width of 10' around the perimeter of a 40 acre woodland field on slopes greater than 15%. Water control devices such as water bars are placed at approximately 15 to 25 per 1,000 ft. section of the firebreak are necessary to control erosion. These will be installed with the same equipment.

Before Situation:

The health and vigor of a rangeland/savannah field has declined due to the encroachment or increase of brush/trees, caused by the lack of fire over a long period of time. The field is reverting to a closed canopy forest and a prescribed burn plan has been developed, which requires the installation of a firebreak to safely conduct the burn. Conditions such as topography, rockiness, the presence of brush and trees, etc. make the use of typical farm equipment impractical. As slopes increase, the potential for excessive erosion increases from soil disturbances. Therefore, the installation of water control devices such as water bars will be important in protecting the resource base. Resource concerns include wildfire hazard from excessive biomass accumulation, undesirable plant productivity and health, inadequate plant structure and composition, habitat degradation, soil erosion, and excessive sediment in surface waters.

After Situation:

A firebreak that exposes at least 10' of mineral soil has been constructed around the perimeter of the field to be burned using dozers or scrapers, according to the prescribed burn plan requirments. Due to steep slopes, water bars or wing ditches have been installed to reduce the threat of water erosion.

Scenario Feature Measure: Length of firebreak

Scenario Unit: Feet

Scenario Typical Size: 5,280

Scenario Cost: $3,462.31 **Scenario Cost/Unit:** $0.66

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price ($/unit)	Quantity	Cost
Equipment/Installation						
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	$57.18	6	$343.08
Water Bars	1500	Installation of graded trail water controlling structures such as water bars, broad based dips for erosion control. Typical cross section is 1.5 feet high with 4:1 side slopes yielding about 0.33 CY/ft of length.	Foot	$2.30	1200	$2,760.00
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	$23.61	6	$141.66
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$217.57	1	$217.57

Practice: 394 - Firebreak

Scenario: #4 - Vegetated, permanent firebreak

Scenario Description:

A 20 foot wide strip of perennial vegetation (typically cool season grasses and/or legumes) will be established around the perimeter of a 40 acre native grass field to serve as a green firebreak. The firebreak will be used to safely implement a planned prescribed burn or reduce the spread of wildfire. Generally water control devices such as water bars are not needed due either to the lack of steep terrain.

Before Situation:

Three farmsteads are located along the outside perimeter of a 40 acre native grass CRP field. A lack of grazing/haying has resulted in an overgrown condition with high fuel loads, thus creating a wildfire hazard. Resource concerns include wildfire hazard from excessive biomass accumulation or undesirable plant productivity/health due to decadence.

After Situation:

A 20 foot wide firebreak has been established to coll season, perennial vegations (i.e. fescue, wheatgrass) around the perimeter of the field. The vegetation within the firebreak will be green and growing during the season of highest wildfire threat. Due to the construction and establishment of the vegetated firebreak, the property is protected from wildfire or can be safely prescribe burned.

Scenario Feature Measure: Length of firebreak

Scenario Unit: Feet

Scenario Typical Size: 5,280

Scenario Cost: $765.62 **Scenario Cost/Unit:** $0.15

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price ($/unit)	Quantity	Cost
Equipment/Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$17.20	2.4	$41.28
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$5.48	2.4	$13.15
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acre	$13.37	5	$66.85
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$8.97	5	$44.85
Materials						
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.54	110	$59.40
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.64	85	$54.40
One Species, Cool Season, Introduced Perennial Grass	2313	Introduced, cool season perennial grass. Includes material and shipping only.	Acre	$32.72	2.4	$78.53
Nitrogen (N), Urea	71	Price per pound of N supplied by Urea. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.64	85	$54.40
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$60.08	1	$60.08
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$146.34	2	$292.68

Practice: 394 - Firebreak

Scenario: #5 - Re-Construct Firebreaks where prior firebreaks existed and they are not usuable.

Scenario Description:

Medium sized equipment such as a small dozer or tractor w/blade is used to create a bare-ground firebreak of a minimum width of 10' around the perimeter of a 40 acre woodland field.

Before Situation:

Firebreaks were constructed by dozing timber 3-4 years ago so that a prescribed burn could be safely conducted. The existing firebreaks currently do not have bare mineral soil due to the natural succession of the plant community, and is in need of refurbishing so that another prescribed fire can occur to control the encroachment of woody species or reduce the timber canopy. Conditions such as topography, rockiness, the presence of small brush, etc. make the use of typical farm equipment impractical. Resource concerns include wildfire hazards from excessive biomass accumulation, undesirable plant productivity and health, inadequate plant structure and composition, and habitat degradation.

After Situation:

A firebreak that exposes at least 10' of mineral soil has been reconstructed around the perimeter of the field to be burned using dozers or scrapers, according to the prescribed burn plan requirments.

Scenario Feature Measure: Length of firebreak

Scenario Unit: Foot

Scenario Typical Size: 5,280

Scenario Cost: $459.94 **Scenario Cost/Unit:** $0.09

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price ($/unit)	Quantity	Cost
Equipment/Installation						
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	$57.18	3	$171.54
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12”, Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	$23.61	3	$70.83
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$217.57	1	$217.57